PATENT SPECIFICATION

Application Date: Nov. 29, 1921. No. 31,972/21. **195,686**

Complete Left: Sept. 29, 1922.

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PROVISIONAL SPECIFICATION.

An Improved Method of Constructing the Skins of Wings, Fuselages, Hulls, Floats and the like of Aircraft.

We, COMMERCIAL AEROPLANE WING SYNDICATE LIMITED, of 34—36, Gresham Street, in the City and County of London, a British company, and HARRIS BOOTH, of "Westgarth," Shortheath, Farnham, in the County of Surrey, a British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to methods of forming the skins of wings, fuselages, hulls, floats and the like of aircraft of the carvel built type and it has for its object to simplify construction and thereby reduce the cost of production.

According to the present invention the skin is formed of a series of strips of wood of comparatively narrow width *i.e.* the width is not great in relation to the thickness so that the strips can bend both in their vertical and horizontal planes as and when they are laid, which enables them to conform to the varying curved surfaces of the frame to be covered without the necessity of making them tapered in width as is usual in the present methods of construction.

It will be appreciated that by using strips having the same cross sectional form throughout their lengths considerable economy in the cost of construction will result.

The strips are preferably formed with tongued and grooved edges but this is not obligatory, and in order to give the strips the necessary thickness either to form said tongues and grooves or to make reliable joints between strips having plain edges the strips may be made of greater thickness than is required for the skin and the undersides of said strips be grooved or recessed longitudinally to reduce their thickness and thereby their weight.

The strips may in some cases be advantageously tapered in the direction of their lengths and for the purpose of giving increased stiffness at any desired part of the structure, strips of increased thickness may be employed at or about said part.

Dated this 29th day of November, 1921.

PHILLIPSS,
Chartered Patent Agents,
70, Chancery Lane, W.C. 2,
Agents for the Applicants.

COMPLETE SPECIFICATION.

An Improved Method of Constructing the Skins of Wings, Fuselages, Hulls, Floats and the like of Aircraft.

We, COMMERCIAL AEROPLANE WING SYNDICATE LIMITED, of 34—36, Gresham Street, in the City and County of London, a British company, and HARRIS BOOTH, of 2, Somali Road, Cricklewood, in the Administrative County of London, formerly of "Westgarth," Shortheath, Farnham, in the County of Surrey, a British subject, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to methods of and means for forming the skins of wings, fuselages, hulls, floats and the

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Price 1s. 6d.

like of aircraft of the carvel built type and it has for its object to simplify construction and thereby reduce the cost of production.

According to the present invention the skin is formed of a single series of strips of wood of comparatively narrow width *i.e.* the width is not great in relation to the thickness so that the strips can bend both edgewise and facewise *i.e.* in both their vertical and horizontal planes as and when they are laid said strips being of such a thickness that they can be bent edgewise without buckling. This enables the strips to conform to the varying curved surfaces of any shaped frame to be covered without the necessity of making them tapered in width as is usual in the present methods of construction.

It will be appreciated that by using strips having the same cross sectional form throughout their lengths considerable economy in the cost of construction will result.

The strips are preferably formed with tongued and grooved edges but this is not obligatory, and in order to give the strips the necessary thickness either to form said tongues and grooves, or to make reliable joints between strips having plain edges, the strips may be made of greater thickness than is required for the skin and the undersides of said strips may be grooved or recessed longitudinally to reduce their thickness and thereby their weight.

The strips may in some cases be advantageously tapered in thickness for the purpose of giving increased stiffness at any desired part of the structure, or strips of various thicknesses may be employed to attain the same end.

In the accompanying drawing,

Fig. 1 is a view in cross section of the strips employed when plain joints are used.

Fig. 2 is a similar view of the strips when tongue and groove joints are used.

Fig. 3 is a similar view of a strip made of increased strength and hollowed out on its under side.

Fig. 4 is a view in cross section of a section of the skin made up of strips of varying thickness and having tongue and groove joints.

Fig. 5 is a broken view in longitudinal elevation of a strip of tapered thickness and shaped for tongue and groove joints, and

Figs. 6, 7, and 8 are views in cross section of the strip shown in Fig. 5 on lines *v*, *v*; *w*, *w*; *x*, *x*; respectively.

Throughout the views similar parts are marked with like numerals of reference.

The strips 1 are made of a width which will permit of their being flexed or bent edgewise *i.e.* in their horizontal planes and of such a thickness that their edgewise flexure will not cause them to buckle and which will allow them to flex facewise *i.e.* in their vertical planes as and when they are laid, whereby they can conform to the varying curved surfaces of the frame to be covered without the necessity of making them tapered in width as is usual in the present methods of construction.

The skin may be made up of a series of strips by means of plain edge to edge joints, or the edges of the strips may be provided with tongues 2 and grooves 3 to form tongue and groove joints.

In order to ensure reliable plain joints between the strips or to enable tongues and grooves of substantial size to be employed, the thickness of the strips may be increased and longitudinal grooves or recesses 4 be formed in their undersides as shown in Fig. 3.

To give increased stiffness to the skin at any desired parts it may be made up of strips of various thicknesses as shewn in Fig. 4. To the same end the strips or some of them may be made of tapering thickness on their under sides 5 as shown in Figs. 5, 6, 7 and 8. Alternatively the skin may be comprised of strips as described with reference to both Figs. 4 and 5.

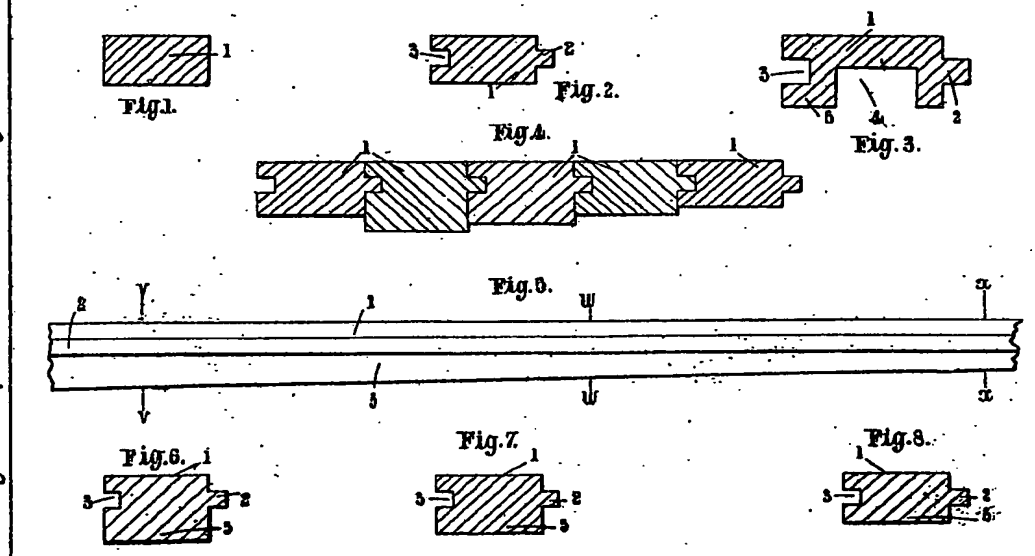
We are aware that it has already been proposed to make the supporting surfaces of flying machines of tongued or grooved boards or slats and also to form hollow bodies such as the fuselages of aeroplanes by the juxtaposition and cohesion at crossed directions of very thin wooden slots of small width.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An improved method of forming the skins of wings, fuselages, hulls, floats and the like of aircraft which consists in building up said skins of a single series of strips capable of being bent or flexed edgewise *i.e.* in their horizontal planes without buckling as well as bent or flexed facewise *i.e.* in their vertical planes.

2. For the construction of the skins of wings, fuselages, hulls, floats, and the like for aircraft, strips of considerable thickness relative to their widths so that they can bend or flex edgewise as well as facewise without buckling.

3. Strips as claimed in the second



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